LARSENS OF IDAHO DEHYDRATION PLANT (PWS 7170013)
SOURCE WATER ASSESSMENT FINAL REPORT

February 4, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land-use inventory of the designated source water assessment area and sensitivity factors associated with the wells and aquifer characteristics in the area.

This report, *Source Water Assessment for Larsens of Idaho dehydration plant*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Larsens of Idaho dehydration plant drinking water system consists of two ground water wells. Wells #1 and #2 have high susceptibility ratings for inorganic, volatile organic, synthetic organic, and microbial contamination due to aquifer properties, high countywide agricultural chemical use, and the presence of potential sources of contaminants in the source water assessment areas. The wells have no confirmed detections of microbial contamination or synthetic organic contamination (SOC) during any water chemistry tests thus far.

In December 1994, the volatile organic contaminants (VOCs) toluene and total xylenes were detected in water samples collected from the well #1 and #2 manifold at concentrations far below the Maximum Contaminant Level (MCL). From December 1994 to March 1995, the inorganic contaminant (IOC) barium was detected in water samples collected from the well #1 and #2 manifold at concentrations well below the MCL. From December 1994 to December 1998, the IOC fluoride was detected in water samples collected from the well #1 and #2 manifold at concentrations well below the MCL. In December 1998, the IOC arsenic was detected in a water sample collected from the well #1 and #2 manifold at a concentration of 6 micrograms per liter (μ/L). The Environmental Protection Agency (EPA) revised the arsenic MCL from 50 μ/L to 10 μ/L on October 31, 2001.

Nitrate concentrations detected in water samples collected from the well #1and #2 manifold are well below the MCL for nitrate. Despite the lack of significant contamination in the well water, Larsens of Idaho dehydration plant should be aware that the potential for contamination still exists. Surrounding agricultural land use practices, high county wide agricultural chemical use, and potential contaminant sources in the source water assessment areas pose a potential threat to the quality of the source water for the Larsens of Idaho dehydration plant wells.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Larsens of Idaho dehydration plant, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). If concentrations of nitrate detected in the source water continue to increase, Larsens of Idaho dehydration plant should investigate the use of various systems like ion exchange, reverse osmosis, or activated alumina to remove this chemical. Additionally, there should be a focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water area and awareness of the potential contaminant sources in the area. Larsens of Idaho dehydration plant should implement Best Management Practices (BMPs) with regard to their wastewater land application activities within the source water assessment areas. Since much of the designated protection area is outside the direct jurisdiction of Larsens of Idaho dehydration plant, it is important that partnerships with industry groups and state and local agencies be established. These collaborative efforts are critical to the success of drinking water protection. The wells should adhere to sanitary survey standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations contain large urban land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are many transportation corridors through the delineations, the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR LARSENS OF IDAHO DEHYDRATION PLANT, CLARK COUNTY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are included in this report. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for Larsens of Idaho dehydration plant is comprised of two ground water wells that serve approximately 250 people through 2 connections. The wells are located near Dubois, Idaho (Figure 1).

There are no significant, reoccurring water chemistry problems in the ground water. In December 1994, the volatile organic contaminants (VOCs) toluene and total xylenes were detected in water samples collected from the well #1 and #2 manifold at concentrations of 1.4 micrograms per liter (µg/L), and 0.5 µg/L, respectively. The MCLs for toluene and xylenes are 1,000 µg/L and 10,000 µg/L, respectively. From December 1994 to March 1995, the inorganic contaminant (IOC) barium was detected in water samples collected from the well #1 and #2 manifold at concentrations ranging from 0.027 milligrams per liter (mg/L) to 0.036 mg/L. The MCL for barium is 2.0 mg/L. From December 1994 to December 1998, the IOC fluoride was detected in water samples collected from the well #1 and #2 manifold at concentrations ranging from 0.33 mg/L to 0.36 mg/L; well below the MCL of 2.0 mg/L.

In December 1998, the IOC arsenic was detected in a water sample collected from the well #1 and #2 manifold at a concentration of 6 µ/L. The Safe Drinking Water Act requires the EPA to revise the current MCL for arsenic. On October 31, 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 10 µ/L by 2006. According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new system and provide technical assistance to small system operators. The EPA has also stated that it "will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture" (EPA, 2001, para 5).

From December 1994 to December 1998, nitrate was detected in eight water samples collected from well #1 and #2 at concentrations ranging from 1.63 mg/L to 3.43 mg/L. These nitrate detections are below the MCL for nitrate of 10 mg/L. No confirmed detections of SOCs, or microbial contaminants have been recorded for the well water thus far. County wide agricultural chemical use is high for this area.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineations using the refined computer model, Wellhead Analytical Element Model (WHAEM) approved by the EPA in determining the source approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Upper Eastern Snake River Plain (UESRP) aquifer in the vicinity of the Larsens of Idaho dehydration plant well. The computer model used site specific data, assimilated by WGI from a variety of sources including the Larsens of Idaho dehydration plant operator report, other local area well logs, and hydrogeologic reports (detailed below).

The UESRP is a northeast trending basin located in southeastern Idaho. Ten thousand square miles of the basin are primarily filled with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with terrestrial and lake deposited sediments along the margins (Garabedian 1992,

p. 5). Individual basalt flows range from 10 to 50 feet in thickness and average 20 to 25 feet (Lindholm 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

The plain is bound on the northeast by rocks of the Yellowstone Group (mainly rhyolite) and Idavada Volcanics to the southwest. The Snake River flows along part of the southern boundary and is the only drainage that leaves the plain. Rivers and streams entering the plain from the south are tributary to the Snake River. Rivers entering from the north vanish into the basalts of the Snake River Plain aquifer.

The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet it may be locally confined in some areas because of inter-bedded clay and dense unfractured basalt (Whitehead 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gallons per minute (gpm) are common for wells open to less than 100 feet of the aquifer. Lindholm (1996 p. 18) estimates aquifer thickness to range from several hundred feet near the plain's margin to thousands of feet near the center.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman 1995, p. 4, and Garabedian 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

Regional ground water flow is to the southwest paralleling the basin (Cosgrove et al. 1999, p. 21; deSonneville, 1972, p. 78; Garabedian 1992, p. 48; and Lindholm 1996, p. 23). Ground water flow direction at the local scale is thought to be highly variable due to preferential flow paths through the fractured and layered basalts.

The delineated source water assessment areas for the Larsens of Idaho dehydration plant wells can best be described as corridors approximately 1,000 feet wide at the wellheads to 2,000 feet wide at the furthest extent, 4,500 feet to the northeast (Figure 2). The actual data used by WGI in determining the source water assessment delineation areas is available from DEQ upon request.

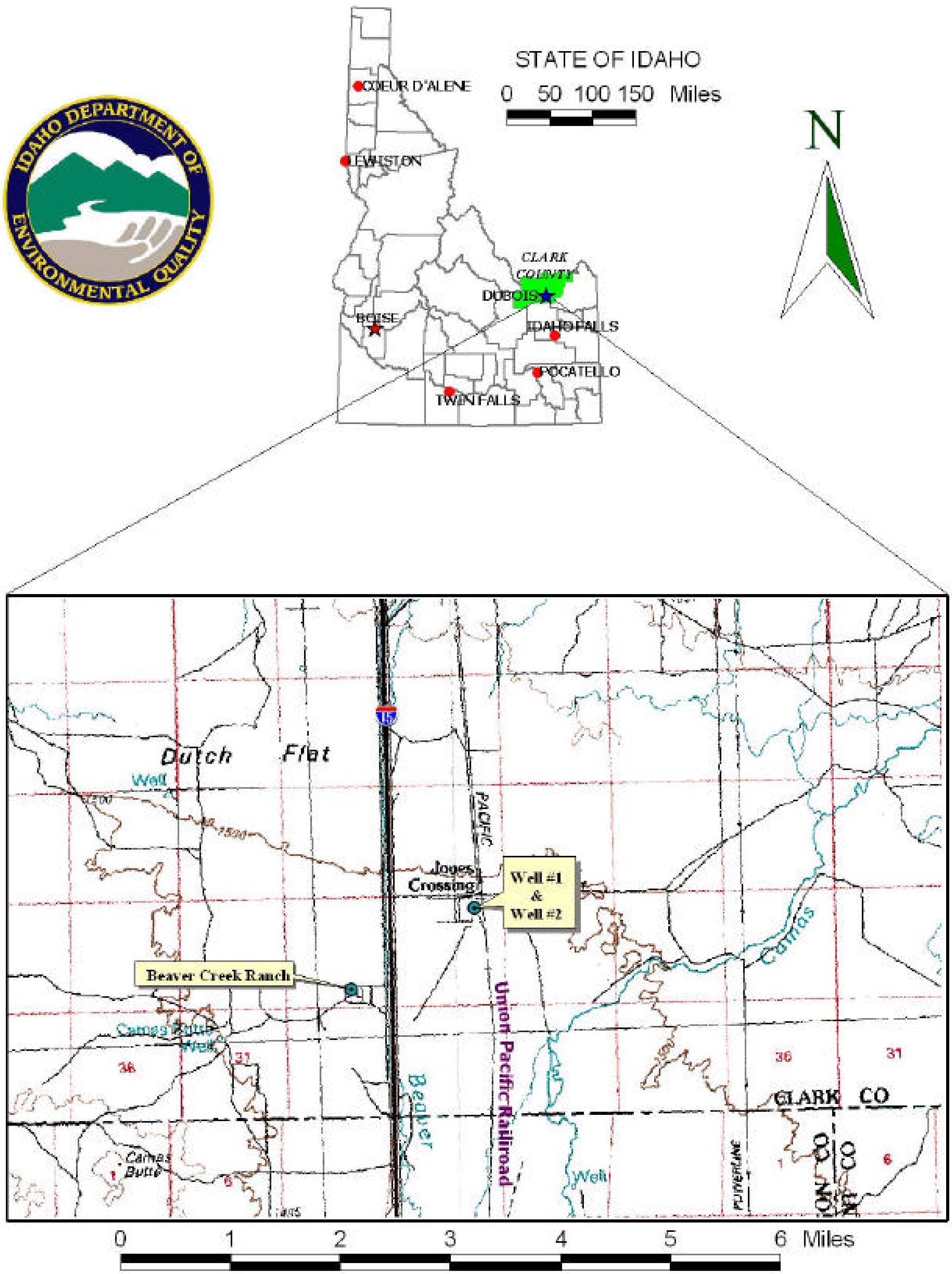
Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the Larsens of Idaho dehydration plant wellheads consists of predominantly irrigated agriculture. One major transportation corridor (Union Pacific Railroad) crosses the source water assessment areas of the wells.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted

FIGURE 1 - Geographic Location of Larsens of Idaho Dehydro Wells



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to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in May 2001. The first phase involved identifying and documenting potential contaminant sources within the Larsens of Idaho dehydration plant source water assessment areas (Figure 2) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

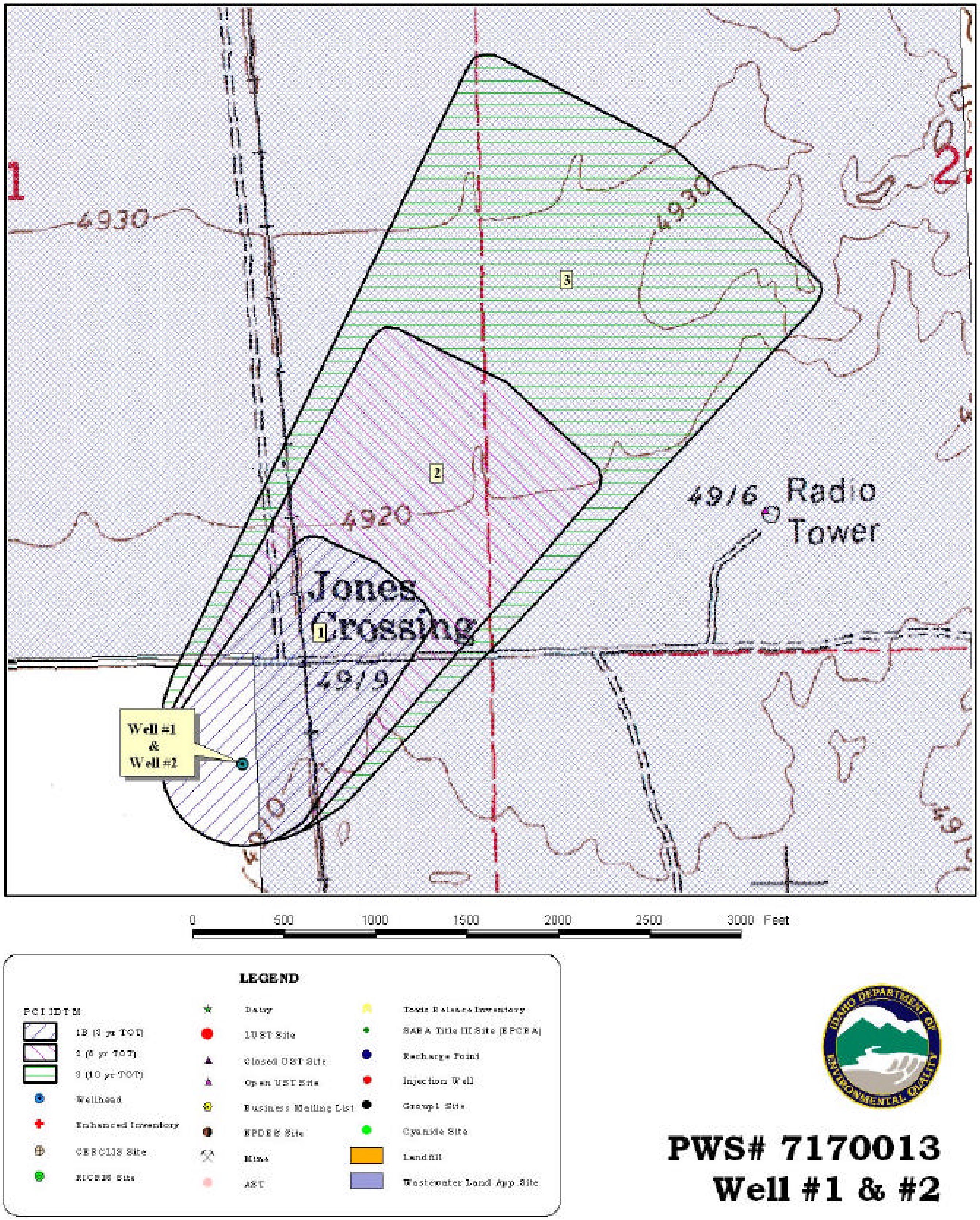
The delineated source water assessment areas (Table 1, Figure 2) contain four (4) potential contaminant sources. These sources include three wastewater land application sites and the Union Pacific Railroad. If an accidental spill occurred on the Union Pacific Railroad IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system due to the fractured nature of the basalt aquifer.

Table 1. Inventory of potential sources that may contaminate the Larsens of Idaho dehydration plant Wells.

Site #	Source Description	TOT Zone[1]	Source of Information	Potential Contaminants[2]
1	Wlap[3] Site, Potato Processing	0-3	Database Search	IOC, VOC, SOC, Microbes
2	Wlap[3] Site, Potato Processing	3-6	Database Search	VOC, SOC
3	Wlap[3] Site, Potato Processing	6-10	Database Search	VOC, SOC
	Union Pacific Railroad	0-3, 3-6, 6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
[3] Wlap = Waste Water Land Application

FIGURE 2 - Larsens of Idaho Dehydro Delineation Map and Potential Contaminant Source Locations



PWS# 7170013
Well #1 & #2

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment 'A' consists of the susceptibility analysis worksheet that DEQ has used to determine your system's susceptibility ranking. These results are summarized on table 2 of this report. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is moderate for the wells (Table 2). This is a result of the soils being in the moderately to poorly-drained class, the fact that the water table is less than 300 feet from the surface, and the lack of laterally extensive low-permeability units to retard the downward movement of contaminants.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The wells have high system construction scores (Table 2). A copy of the most recent, 1996, sanitary survey could not be located. Consequently, it was not possible to determine whether or not current wellhead protection standards are being met.

The well logs indicate that neither of the wells meets current public water system (PWS) construction standards. While both wells may have been in compliance at the time they were installed, the Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. PWS wells are required to have pump tests. No record of a pump test exists for either well. Additionally, current standards require the installation of 0.375-inch thick casing for casing diameters of 12 inches or less. The Larsens of Idaho dehydration plant wells were installed with 0.250-inch thick casing.

Potential Contaminant Source and Land Use

The wells rate high for IOCs (i.e. nitrates, arsenic) and SOCs (i.e. pesticides), and moderate for VOCs (i.e. petroleum products) and microbial contaminants (i.e. bacteria). Agricultural land use, high county wide agricultural chemical use, and potential contaminant sources in the delineated source water areas account for the potential contaminant inventory rating. The wells are also in a county with high levels of nitrogen fertilizer use, moderate herbicide use, and high total agricultural chemical use. Fortunately, no significant water chemistry problems have been recorded in the finished well water thus far.

Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead indicates that a pathway for contamination already exists and therefore a high susceptibility rating is assigned regardless of land use of the area. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the system rates high for all categories.

Table 2. Summary of the Larsens of Idaho dehydration plant susceptibility evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
Well		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	H	M	H	M	H	H	H	H	H
Well #2	M	H	M	H	M	H	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Aquifer properties, intense agricultural practices, the high countywide use of agricultural chemicals, and the presence of potential contaminant sources (Table 1) all contribute to the high susceptibility ratings. Though there are no significant water chemistry problems recorded for the source water to date, there have been detections in the finished well water of IOCs (arsenic, barium, fluoride), VOCs (toluene and xylenes), and nitrate at levels below the current MCL. No SOCs or microbial contaminants have been detected in the well water thus far.

Section 4. Options for Drinking water protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan. For Larsens of Idaho dehydration plant, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey. If concentrations of nitrate detected in the source water increase, Larsens of Idaho dehydration plant should investigate the use of various systems like ion exchange, reverse osmosis, or activated alumina that could be used to remove this chemical. Additionally, there should be a focus on the implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water area and awareness of the potential contaminant sources in the area. Larsens of Idaho dehydration plant should implement best management practices with regard to their wastewater land application activities within the source water assessment areeas. Since much of the designated protection area is outside the direct jurisdiction of Larsens of Idaho dehydration plant, it is important that partnerships with state and local agencies, and industry groups be established. These collaborative efforts are critical to the success of drinking water protection. The wells should adhere to sanitary survey standards regarding wellhead protection.

Continued vigilance in keeping the wells protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations contain large urban land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are many transportation corridors through the delineations, the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Garabedian, S.P., 1992 Hydrology and Digital Simulation of the Regional Aquifer System, Eastern Snake River Plain, Idaho, U.S. Geological Survey Professional Paper 1408-F, 102 p.

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Lindholm, G.F. 1996, Summary of the Snake River Plain Regional Aquifer-System Analysis in Idaho and Eastern Oregon, U.S. Geological Survey Professional Paper 1408-A, 59 p.

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Attachment A

Larsens of Idaho dehydration plant Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction

		SCORE
Drill Date	11/24/87	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	NO	0
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		4

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	YES	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

Potential Contaminant / Land Use - ZONE 1B

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or	YES	2	1	1	
4 Points Maximum		2	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	9	9	8

Potential Contaminant / Land Use - ZONE II

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0

Potential Contaminant / Land Use - ZONE III

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		22	19	21	10

4. Final Susceptibility Source Score

	IOC	VOC	SOC	Microbial
4. Final Susceptibility Source Score	13	13	13	13
5. Final Well Ranking	High	High	High	High

1. System Construction

		SCORE
Drill Date	11/24/90	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	NO	0
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		4

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	YES	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or	YES	2	1	1	
4 Points Maximum		2	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	9	9	8
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		22	19	21	10

4. Final Susceptibility Source Score

	IOC	VOC	SOC	Microbial
4. Final Susceptibility Source Score	13	13	13	13
5. Final Well Ranking	High	High	High	High